

TEACHER TRAINING AND PEDAGOGICAL INNOVATION: A COMPARATIVE STUDY OF TRADITIONAL VS. MODERN TEACHING METHODS IN CALABAR EDUCATION ZONE, CROSS RIVER STATE, NIGERIA.

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ABSTRACT

This study compared pedagogical innovation and teacher effectiveness between traditional and modern teaching methods among public secondary school teachers in Calabar Education Zone, Cross River State, Nigeria. A comparative survey design was adopted. Two research questions and two null hypotheses guided the study. The population comprised 1,500 teachers in public senior secondary schools in the zone. Stratified random sampling was used to select 300 teachers across schools. Data were collected using a 15-item, 4-point Likert “Teacher Training and Pedagogical Innovation Questionnaire” (TTPIQ) with two subscales: Pedagogical Innovation, 8 items; Teacher Effectiveness, 7 items. Face validity was established by two test and measurement experts from University of Calabar. Cronbach's alpha yielded reliability coefficients of 0.97 for the overall instrument, 0.94 for Pedagogical Innovation, and 0.93 for Teacher Effectiveness. Data were analyzed using mean, standard deviation, and independent samples t-test at 0.05 level of significance. Results showed that teachers using modern methods reported significantly higher pedagogical innovation ($M = 3.42$, $SD = 0.58$) than those using traditional methods ($M = 2.85$, $SD = 0.65$), $t(298) = 8.12$, $p < 0.001$. Similarly, teacher effectiveness was significantly higher for modern methods ($M = 3.60$, $SD = 0.52$) than traditional methods ($M = 3.05$, $SD = 0.62$), $t(298) = 7.95$, $p < 0.001$. The study concludes that modern teaching methods significantly enhance both pedagogical innovation and teacher effectiveness compared to traditional methods. It is recommended that teachers receive continuous professional development on modern, student-centered pedagogies and that government provides adequate resources to support their implementation.

Keywords: Teacher training, traditional teaching method, modern teaching method, pedagogical innovation, teacher effectiveness

INTRODUCTION

Background of the study

Teaching method is a core determinant of classroom practice and student learning outcomes. In Nigerian secondary schools, two broad approaches dominate: traditional teacher-centered methods and modern student-centered methods. Traditional methods emphasize lectures, rote memorization, and teacher authority, with limited learner participation. Modern methods prioritize active learning, critical thinking, collaboration, and integration of technology. With curriculum reforms and 21st-century skills demands, there is growing pressure on teachers to shift from transmission models to innovative pedagogies. However, many teachers in Cross River State continue to rely on traditional methods, raising questions about the impact on pedagogical innovation and effectiveness.

Concept of teaching methods and pedagogical innovation

Teaching method remains a central determinant of classroom practice and pedagogical innovation. Traditional methods are largely characterized by teacher-centered instruction, lectures, and memorization, while modern methods emphasize student-centered learning, collaboration, technology integration, and critical thinking. Recent studies consistently link modern pedagogies to higher levels of innovation in teaching. Oluwatosin (2024) argued that the shift from teacher-centered to student-centered approaches in Nigerian schools prioritizes engagement, creativity, and problem-solving, which are core indicators of pedagogical innovation. Similarly, Sani (2024) found that most pre-service teachers in Nigeria view current curricula as outdated and report inadequate exposure to technology-integrated, modern teaching strategies, limiting their capacity to innovate in the classroom. Hidig (2023) noted that while traditional education systems preserve cultural values, over-reliance on them creates tension with the demands of modern education that require adaptability and creative instructional design. Ekiugbo (2024) also demonstrated that guided discovery and inquiry-based methods, which are student-centered, produced more innovative classroom practices than lecture-based instruction in Nigerian secondary schools. These findings suggest that pedagogical innovation thrives when teachers move away from transmission models toward interactive and technology-supported methods.

Teaching methods and teacher effectiveness

Empirical evidence from 2017 onward continues to affirm a strong relationship between teaching method and teacher effectiveness. Nnabugwu et al. (2024) compared traditional methods with communicative language teaching in Uyo and found that while traditional methods yielded quick gains in memorization, communicative and student-centered approaches produced stronger long-term effectiveness in language proficiency. Isa et al. (2020) reported that student-centered and interactive methods significantly improved academic performance compared to teacher-dominated instruction, indicating higher instructional effectiveness. Oluwatosin (2024) further observed that teachers who integrate digital tools and collaborative strategies are perceived as more effective because they align with students' learning styles in the digital age. Sani (2024) also highlighted that limited opportunities for hands-on, modern teaching practice during teacher training reduce

effectiveness after graduation, as many teachers struggle to implement innovative strategies. Ekiugbo (2024) concluded that inquiry and guided discovery methods not only improved student achievement but also reflected greater teacher effectiveness than lecture methods in social studies classrooms. Hidig (2023) cautioned that exclusive dependence on traditional methods may reduce teacher effectiveness in contexts that require 21st century skills, even though such methods remain culturally relevant. Collectively, these studies indicate that modern, student-centered, and technology-integrated methods enhance teacher effectiveness more than conventional lecture-based approaches.

Comparative studies on traditional vs modern methods

Comparative research from 2017 to 2024 provides direct evidence on the relative impact of traditional and modern teaching methods. Ekiugbo (2024) found that students taught with guided discovery and inquiry methods outperformed those taught with lecture methods in achievement and engagement, showing the superiority of modern approaches. Isa et al. (2020) also reported that interactive and student-centered methods produced better learning outcomes than traditional, teacher-centered methods in Nigerian secondary schools. Nnabugwu et al. (2024) observed that traditional methods were effective for short-term recall, but modern communicative methods were more effective for sustained language competence, suggesting different strengths depending on learning goals. Sani (2024) revealed systemic barriers such as inadequate funding and limited professional development that hinder adoption of modern methods, despite teachers' recognition of their importance for effectiveness. Oluwatosin (2024) concluded that the reluctance of many Nigerian teachers to embrace modern strategies creates a gap between instructional practice and students' digital learning expectations. Hidig (2023) emphasized that effective teaching in contemporary contexts requires a balance, but modern methods are indispensable for fostering critical thinking and innovation. Recent studies by Adebayo and Adeyemi (2019), Oyinloye and Imenda (2019), Okoye and Okoye (2020), and Nwosu and Udoh (2022) further corroborated that problem-based, cooperative, and technology-assisted methods consistently outperform traditional lectures in achievement, retention, and teacher effectiveness across Nigerian secondary schools. These comparative findings imply that while traditional methods may serve specific instructional purposes, modern methods are more aligned with current demands for innovation and effective teaching.

Statement of the problem

Despite policy emphasis on learner-centered instruction, empirical evidence on the comparative impact of traditional versus modern teaching methods on teacher-level outcomes in Calabar Education Zone remains limited. Pedagogical innovation refers to teachers' ability to design and apply creative, adaptive instructional strategies, while teacher effectiveness reflects the quality of instructional delivery and impact on learners. If modern methods truly enhance these outcomes, then professional development must be re-focused. If not, resources may be misdirected. This gap necessitates a direct comparison of the two approaches among teachers in the study area

Purpose of the study

The purpose of this study was to compare the impact of traditional and modern teaching methods on pedagogical innovation and teacher effectiveness among public senior secondary school teachers in Calabar Education Zone, Cross River State, Nigeria.

The following research questions guided the study

1. Is there a significant difference in pedagogical innovation between teachers who use traditional teaching methods and those who use modern teaching methods?
2. Is there a significant difference in teacher effectiveness between teachers who use traditional teaching methods and those who use modern teaching methods?

Hypotheses

For the purpose of this study, the following hypotheses were formulated to be tested at 0.05 level of significance.

1. There is no significant difference in pedagogical innovation between teachers who use traditional teaching methods and those who use modern teaching methods.
2. There is no significant difference in teacher effectiveness between teachers who use traditional teaching methods and those who use modern teaching methods.

Methodology

Research design

A comparative survey design was adopted for this study. The design was considered appropriate because it allows for comparison of two existing groups without manipulation of variables. Teachers were classified into “Traditional Methods” and “Modern Methods” groups based on their dominant self-reported teaching approach.

Population of the study

The population consisted of 1,500 public senior secondary school teachers in Calabar Education Zone, Cross River State, Nigeria, according to records from the State Secondary Education Board, 2024.

Sample and sampling technique

Stratified random sampling was used to select the sample. The education zone was stratified by Local Government Areas, and schools were randomly selected within each stratum. From the selected schools, 300 teachers were randomly sampled. This sample size was deemed adequate for statistical generalization using the Central Limit Theorem. The final sample comprised 150 teachers who predominantly used traditional methods and 150 who predominantly used modern methods. Classification was based on teachers' self-identification of their dominant teaching approach in Section A of the questionnaire

Instrumentation

Data were collected using a self-developed instrument titled “Teacher Training and

Pedagogical Innovation Questionnaire” (TTPIQ). The questionnaire had three sections. Section A captured demographic information. Section B contained 8 items measuring Pedagogical Innovation. Section C contained 7 items measuring Teacher Effectiveness. All items were structured on a 4-point Likert scale: Strongly Agree = 4, Agree = 3, Disagree = 2, Strongly Disagree = 1. Higher scores indicated greater innovation and effectiveness.

Validity and reliability

Face and content validity were established by two experts in Test and Measurement from the University of Calabar. Their corrections on clarity, relevance, and coverage were incorporated. To determine reliability, the instrument was trial-tested on 30 teachers outside the study area. Data from the pilot were analyzed using Cronbach's alpha. The reliability coefficients were 0.94 for Pedagogical Innovation, 0.93 for Teacher Effectiveness, and 0.97 for the overall instrument, indicating high internal consistency.

Method of data collection

With permission from school principals, the researchers and trained research assistants administered the questionnaires directly to teachers during free periods. Completed copies were retrieved immediately to ensure a high return rate. All 300 questionnaires were returned and found usable.

Method of data analysis

Data were analyzed using SPSS version 26. Descriptive statistics of frequency, percentage, mean, and standard deviation were used to summarize respondents' characteristics and scores. To test the hypotheses, an independent samples t-test was employed at 0.05 level of significance. Results were presented in tables and interpreted based on mean differences and p-values.

Assumption testing for independent t-test

Before conducting the independent samples t-test, its assumptions were checked. Normality of scores was assessed using the Shapiro-Wilk test and visual inspection of histograms. Both groups showed approximately normal distributions, which is sufficient given the sample size of $n = 150$ per group, as large samples are robust to minor violations of normality according to the Central Limit Theorem. Homogeneity of variances was tested using Levene's test. Results showed no significant violation of equal variances for Pedagogical Innovation, $F = 2.10$, $p = 0.149$, and Teacher Effectiveness, $F = 1.87$, $p = 0.172$. Therefore, the “equal variances assumed” version of the t-test was used for both hypotheses.

Results

Hypothesis 1

There is no significant difference in pedagogical innovation between teachers using traditional teaching methods and those using modern teaching methods.

Table 1: Descriptive Statistics for Pedagogical Innovation by Teaching Method

Table 1: Descriptive statistics for pedagogical innovation by teaching method

Teaching method	N	Mean	Std. Deviation
Modern methods	150	3.42	0.58
Traditional methods	150	2.85	0.65

Table 2: Independent t-test for Pedagogical Innovation

Interpretation of Hypothesis 1

Variables	T	df	p- value	Mean difference	95% CI
Pedagogical	8.12	2.98	< 0.001	0.57	0.43,0.71

The results in Tables 1 and 2 show that teachers using modern methods reported higher pedagogical innovation ($M = 3.42$, $SD = 0.58$) than teachers using traditional methods ($M = 2.85$, $SD = 0.65$). An independent samples t-test revealed that this difference was statistically significant, $t(298) = 8.12$, $p < 0.001$, mean difference = 0.57, 95% CI [0.43, 0.71]. Since $p < 0.05$, the null hypothesis was rejected. This indicates that modern teaching methods are associated with significantly higher levels of pedagogical innovation among teachers in Calabar Education Zone.

Hypothesis 2

There is no significant difference in teacher effectiveness between teachers using traditional teaching methods and those using modern teaching methods.

Table 3:

Descriptive Statistics for Teacher Effectiveness by teaching method

Teaching method	N	Mean	Std Deviation
Modern methods	150	3.60	0.52
Traditional methods	150	3.05	0.62

Table 4: Independent t-test for Teacher effectiveness

Interpretation of Hypothesis 2

Variables	T	df	p- value	Mean difference	95% CI
Teacher effectiveness	7.95	2.98	< 0.001	0.55	0.41,0.69

As presented in Tables 3 and 4, teachers using modern methods demonstrated higher teacher effectiveness ($M = 3.60$, $SD = 0.52$) compared to those using traditional methods ($M = 3.05$, $SD = 0.62$). The independent samples t-test showed a statistically significant difference, $t(298) = 7.95$, $p < 0.001$, mean difference = 0.55, 95% CI [0.41, 0.69]. With $p < 0.05$, the null hypothesis was rejected. This implies that modern teaching methods significantly enhance teacher effectiveness relative to traditional methods in the study area.

Summary of findings

Both hypotheses were rejected at the 0.05 level of significance. The findings indicate that modern teaching methods are significantly more effective in promoting pedagogical innovation and improving teacher effectiveness than traditional methods among public senior secondary school teachers in Calabar Education Zone.

Discussion of findings

This section discusses the results of the study in relation to the hypotheses tested and in line with empirical findings from recent literature.

Pedagogical innovation

The first hypothesis revealed a significant difference in pedagogical innovation between teachers using traditional and modern teaching methods, with modern methods producing higher mean scores. This finding aligns with Ekiugbo (2024), who reported that guided discovery and inquiry-based methods fostered more innovative classroom practices than lecture methods in Nigerian secondary schools. Similarly, Oluwatosin (2024) argued that the shift from teacher-centered to student-centered approaches promotes creativity, problem-solving, and adaptive teaching, which are key indicators of pedagogical innovation. The result also supports Sani (2024), who found that teachers trained in technology-integrated and modern pedagogies demonstrate greater capacity for innovation, while those limited to traditional methods struggle with curriculum adaptation. Hidig (2023) added that over-reliance on traditional education reduces innovation because such methods emphasize memorization over critical thinking and flexibility. Furthermore, Okon and Edet (2022) observed that teachers who integrate technology into instruction show higher levels of pedagogical innovation than those who do not. Collectively, these studies confirm that modern teaching methods provide teachers with the tools and flexibility needed to design creative, learner-centered lessons, hence the significant difference observed in this study.

Teacher effectiveness

The second hypothesis showed that teacher effectiveness was significantly higher among teachers using modern teaching methods compared to those using traditional methods. This finding is consistent with Nnabugwu et al. (2024), who found that communicative and student-centered methods produced stronger long-term effectiveness in improving students' language proficiency than traditional methods focused on repetition. Isa et al. (2020) also reported that interactive and student-centered methods led to better academic performance, reflecting higher instructional effectiveness than teacher-dominated approaches. Oluwatosin (2024) noted that teachers who adopt digital and collaborative strategies are perceived as more effective because they match students' learning expectations in the digital era. The result further agrees with Bello and Owofe (2021), who established that student-centered learning approaches enhance teacher effectiveness in Lagos State secondary schools. Sani (2024) explained that limited exposure to modern teaching practice during training reduces effectiveness, which may explain why teachers using traditional methods in this study scored lower. Okoye and Okoye (2020) also found that technology-enhanced teaching methods significantly improved teacher effectiveness in Anambra State. However, Nnabugwu et al. (2024) observed that traditional methods can produce quick gains in memorization, suggesting that they remain useful for specific

instructional goals. Overall, the findings of this study support the growing body of recent research indicating that modern, student-centered, and technology-integrated methods are more effective for promoting teacher effectiveness in Nigerian secondary schools.

Implication

The results imply that the adoption of modern teaching methods is not just a preference but a necessity for enhancing both pedagogical innovation and teacher effectiveness in 21st century classrooms. Teachers who limit themselves to traditional methods may achieve basic content delivery but are likely to be less innovative and less effective in meeting diverse student needs.

Conclusion

Based on the findings of this study, it is concluded that teaching method has a significant influence on both pedagogical innovation and teacher effectiveness among public senior secondary school teachers in Calabar Education Zone. First, there is a significant difference in pedagogical innovation between teachers using modern teaching methods and those using traditional teaching methods. Teachers who adopt modern, student-centered, and technology-integrated approaches demonstrate higher levels of pedagogical innovation in terms of creativity, flexibility, and adaptive instructional practices than teachers who rely on traditional, lecture-based methods. Second, there is a significant difference in teacher effectiveness between teachers using modern teaching methods and those using traditional teaching methods. Teachers who employ modern teaching methods are more effective in facilitating learning, engaging students, and achieving instructional goals compared to those using traditional methods. Therefore, modern teaching methods are more effective in promoting pedagogical innovation and enhancing teacher effectiveness than traditional teaching methods in the study area.

Recommendations

Based on the conclusions drawn, the following recommendations are made in line with the study variables:

1. On pedagogical innovation, teachers in public senior secondary schools should be encouraged by the Calabar education authority to adopt modern teaching methods such as guided discovery, inquiry-based learning, cooperative learning, and technology-integrated instruction. This will enhance their capacity to design creative and innovative lessons that meet 21st century learning demands. School administrators and education authorities should provide regular in-service training and workshops focused on innovative teaching strategies.
2. Concerning teacher effectiveness, teachers in the education zone should shift from exclusive use of traditional, teacher-centered methods to modern, student-centered approaches to improve instructional effectiveness. Government and stakeholders in education should invest in digital resources, ICT facilities, and continuous professional development programs to equip teachers with skills for effective use of modern teaching methods. This will enable teachers to engage learners better and improve overall teaching outcomes.

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